CONTENTS

	Page	
Tables	iii	1/A6
Purpose	1	1/A7
Alternatives to be Evaluated	2	1/A8
Uniform emission standards for new and existing source categories	3	1/A9
Transferable emission reduction assessments (TERA)	4	1/A10
Evaluation of prevention of significant deterioration	5	1/A11
Modification to PSD and nonattainment - varying offset ratio	8	1/A14
Modification to PSD and nonattainment - emission allocation	9	1/B1
Examination of the effect of alternatives ambient pollutant levels	10	1/B2
Data Collection Methodology	11	1/B3
Major Items to be Included in Policy Alternative Analyses	12	1/B4
Uniform emission standards for new and existing source categories	12	1/B4

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ORIGINAL

METHODOLOGY FOR EXAMINING POLICY ALTERNATIVES

by

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Contract No. 11-AQ-7695
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Report Disclaimer

This draft report is being made available for public review and comment. This report is undergoing review by the NCAQ staff at the date of its release. Therefore, this draft report has not necessarily been revised to reflect any concerns of NCAQ staff. Your comments will assist the NCAQ staff in preparing final reports and recommendations. This report has not been reviewed by the Commission members and therefore does not reflect Commission policy or conclusions.

Methodology for Examining Policy Alternatives in Ohio River Valley

NCAQ Staff Summary

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The purpose of this report is to describe how PEDCo proposes to analyze six policy alternatives in the Ohio River Valley. The six alternatives are:

1. Uniform Emission Standards for New and Existing Source Categories
2. Transferable Emission Reduction Assessments (TERA)
3. Evaluation of Prevention of Significant Deterioration Increments
4. Modification to PSD and Nonattainment--Varying Offset Ratio
5. Modification to PSD and Nonattainment--Emission Allocation Approach
6. Examination of the Effects of Alternative Ambient Pollutant Levels.

With the exception of the last alternative, which addresses only ozone (O_3), the alternatives will be analyzed for sulfur dioxide (SO_2) and total suspended particulates (TSP).

In analyzing each of the alternatives, PEDCo proposes to compile the emission inventory and determine varying levels of control technologies (SIP limits, RACT limits and BACT limits). Impact on air quality levels will be derived from dispersion analysis. Costs will be detailed for each control technology. PEDCo also will analyze the institutional issues pertaining to implementation of each alternative through a series of interviews.

For Uniform Emission Standards, PEDCo proposes to base the standards on application of Best Available Control Technology (BACT) for new and existingsources. (For existing sources, this might be viewed by some to be Best Available Retrofit Technology (BART).) In any case, the PEDCo methodology raises a question of which control level to use as a technological basis for emission limitations on existing sources; BACT (or BART) or Reasonably Available Control Technology (RACT). The Commission will resolve this question in the near future.

For TERA, PEDCo will determine available emission reductions beyond RACT for existing sources in the region and determine the costs. Emission reductions beyond RACT will be allocated among the sources and a market for trading emission reductions will be simulated based on incremental costs to achieve various reductions. Interviews will be conducted with agency and industrial representatives to determine the potential for creating trading. PEDCo does not indicate whether any computer simulation model will be relied upon.

To evaluate PSD increments and the effects of replacing current Class II increments with Class III increments and the secondary standards, PEDCo will simulate projected growth and determine, based on air quality impacts, the extent to which this growth is either constrained or permitted. Without regard to specific growth projections the total amount of growth permitted by each alternative also will be estimated.

To evaluate impacts of varying offset ratios, different ratios will be applied and the availability and costs of offsets will be estimated. How offsets would be acquired will be assessed qualitatively.

To analyze an emission allocation system, PEDCo will focus on the emission allocation program in Jefferson County, Kentucky, and estimate what the impacts would have been had that program been implemented.

For alternative ozone levels, PEDCo will estimate the additional emission reductions necessary to meet more stringent standards and the decrease in reductions necessary to meet less stringent than current standards. Based on the costs of added or deleted emission reduction measures, the economic impact of revised standards will be evaluated.

TABLES

Number		Page
1	Policy Alternatives to be Evaluated in the Ohio River Valley	2
2	Air Quality Increments for the Prevention of Significant Deterioration	5
3	Major Sources Subject to PSD Review	6
4	Summary of Key Elements in Analytical Methodology	16

PURPOSE

The purpose of this task is to assist the NCAQ in the evaluation of the impact and feasibility of implementing several policy alternatives. These policy alternatives are to be compared in terms of emission reductions achievable through implementation, cost impacts, air quality improvements, the period of time required for making progress towards attaining the air quality goals for the area and institutional issues or constraints associated with the implementation of each of these alternatives. The analysis shall include criteria for choosing among the policy alternatives and a means of simulating the implementation of several alternatives.

The analysis of the policy alternatives shall include an assessment of the feasibility of implementing each measure. The feasibility must be assessed in terms of the technical, economic, and political feasibility.

Since the policy alternatives have been specifically selected for the study area, this will enable the NCAQ to compare the impacts and benefits which would be associated with alternatives that have some applicability with respect to possible implementation in the study area. This analysis will also help the NCAQ to decide whether changes in the current

control strategies would help meet the Nation's air quality goals more effectively or more economically.

ALTERNATIVES TO BE EVALUATED

In deciding which alternatives would be tested in each study, the NCAQ attempted to focus on those alternatives that would provide the most representative results. However, the available resources and the nature of each policy were also considered. In some cases a particular policy alternative would apply more directly to the problems in one region than for another. In several cases the policy alternatives were selected because the particular air quality problems in the region provide an opportunity to truly test the policy alternative.

Table 1 presents a list of the policy alternatives that have been selected for study in the Ohio River Valley. Since there may be some questions as to what is involved with implementing a particular policy alternative, the following brief discussion with respect to each policy alternative is provided.

TABLE 1. POLICY ALTERNATIVES TO BE EVALUATED IN THE OHIO RIVER VALLEY

Alternative	Pollutants
1. Uniform Emission Standards for New and Existing Source Categories	SO_2, TSP
2. Transferable Emission Reduction Assessments (TERA)	SO_2, TSP
3. Evaluation of Prevention of Significant Deterioration	SO_2, TSP

(continued)

TABLE 1 (continued)

Alternative	Pollutants
4. Modification to PSD and Nonattainment - Varying Offset Ratio	SO_2, TSP
5. Modification to PSD and Nonattainment - Emission Allocation Approach	SO_2, TSP
6. Examination of the Effect of Alternative Ambient Pollutant Levels	O_3, SO_2, TSP

Uniform Emission Standards for New and Existing Source Categories

The emission limitations currently contained in the State Implementation Plans (SIP's) were developed to achieve or maintain the National Ambient Air Quality Standards (NAAQS) in a specific area. The development of the specific emission limitation in many cases was based on the particular mix of sources in the area, the amount of projected growth over a prescribed time period, and the current air quality levels. Thus, in many cases, the degree of control, and the sources to be covered varied from area to area and even varied within a particular nonattainment area if more than one state was involved with the development of the SIP for that interstate area.

The alternative to be evaluated is the development of a control strategy for an area based on implementing a set uniform source-specific emission limitations. These emission limitations would be based on the application of Best Available Control Technology (BACT) to all sources (both new and existing)

within the Ohio River Valley area. However, the specific emission limits may differ between new and existing sources depending on the current requirements for existing sources, their energy requirements, and the age of the source. Thus, this alternative will impose the same basic requirements on all similar sources throughout the study area regardless of the level of control which may be needed to attain the NAAQS.

Transferable Emission Reduction Assessments (TERA)

TERA is an extension of two current policies with respect to nonattainment areas - offsets and the bubble concept. The TERA concept is a policy alternative that provides for a method of reducing the area-wide emissions from a level which results from the imposition of Reasonably Available Control Technology (RACT) to a level equivalent to the attainment of the NAAQS. Under the TERA concept, the total remaining emission reductions necessary to attain the NAAQS after the application of RACT to all major sources is determined using the post-RACT emission inventory. A share of this needed reduction is assessed to each source in the region based on its post-RACT emissions.

The emissions reductions are transferable among sources, and the source may obtain its assigned reductions in a number of ways: (1) reduce its own emissions through better control, cutting back on their operating schedule or closing down part of its process; (2) purchase the necessary emission reductions from another source (offsets); (3) purchase the emission reductions

indirectly through a third party or broker; or (4) purchase the emission reductions indirectly through the payment of an emission fee established by the State or local air pollution control agency, which in turn purchases the needed reductions from another source.

Evaluation of Prevention of Significant Deterioration

The 1977 Amendments to the Clean Air Act essentially ratified, extended, and made more stringent the PSD provisions promulgated in 1974. Basically the new Amendments require classification of all areas as Class I, II, or III. The air quality in each of these areas is allowed to deteriorate only by a specific amount or increment. The increments for each Class are presented in Table 2. Except for the Class I areas listed below and the Northern Cheyenne Indian Reservation, the entire country is designated as Class II.

TABLE 2. AIR QUALITY INCREMENTS FOR THE PREVENTION OF SIGNIFICANT DETERIORATION ($\mu g/m^3$)

	Class I	Class II	Class III
SO_2 annual	2	20	40
24-hour	5	91	182
3-hour	25	512	700
TSP annual	5	19	37
24-hour	10	37	75

The 1977 Amendments designated the following areas as Class I areas and prohibit redesignation into either of the other two

classes: 1) international parks, 2) national wilderness areas exceeding 5000 acres, 3) national memorial parks exceeding 5000 acres, and 4) national parks exceeding 6000 acres. There are no Class I areas in Ohio or Indiana and only one in Kentucky (Mammoth Cave) which is approximately 70 miles south of Louisville.

The 1977 Amendments also required that each new or modified major emitting facility or major stationary source obtain a pre-construction permit. These amendments defined a major emitting facility as a stationary source of air pollutants in any of 28 specific source categories (listed in Table 3) that emit or have the potential to emit 100 tons/yr or more of any pollutant regulated under the Clean Air Act and as any other source (not specifically listed) that has the potential to emit 250 tons/yr or more of any pollutant regulated under this act.

TABLE 3. MAJOR SOURCES SUBJECT TO PSD REVIEW

° Specific sources with potential emissions >100 tons/yr
Fossil fuel-fired steam electric plants (>250 million Btu/h)
Coal-cleaning plants (thermal dryers)
Kraft pulp mills
Portland cement plants
Primary zinc smelters
Iron and steel mill plants
Primary aluminum ore reduction plants
Primary copper smelters
Municipal incinerators (>250 tons/day)
Hydrofluoric acid plants
Sulfuric acid plants
Nitrric acid plants
Petroleum refineries
Lime plants
Phosphate rock processing plants

(continued)

TABLE 3 (continued)

- Specific sources with potential emissions >100 tons/yr

  Coke oven batteries
  Sulfur recovery plants
  Carbon black plants (furnace process)
  Primary lead smelters
  Fuel conversion plants
  Sintering plants
  Secondary metal production facilities
  Chemical process plants
  Fossil-fuel boilers (>250 million Btu/h)
  Petroleum storage and transfer facilities (>300,000 bbl)
  Taconite ore processing facilities
  Glass-fiber processing plants
  Charcoal production facilities

- Any other source with potential emissions >250 tons/yr

On June 19, 1978, the EPA published regulations to implement the 1977 Amendments. These regulations state that no major stationary source may be constructed unless the following criteria are met: 1) a permit is issued to that source; 2) the owner or operator of the source demonstrates that the emissions from the operation will not cause or contribute to air pollution levels in excess of maximum allowable increases (i.e., the increments for TSP and SO_2 established under Section 163 of the Clean Air Act), NAAQS in any region, or other applicable emission standards or standards of performance under the Clean Air Act; 3) the proposed source is subject to the BACT for each pollutant it emits, which is subject to regulation under the Clean Air Act; and 4) the owner or operator agrees to conduct such monitoring that may be necessary to determine what effect emissions of this proposed facility may have on air quality.

The potential impact of the PSD program on growth and total loading of pollutants will be evaluated. A determination will be made of how much growth would be allowed in each of the three classes of areas and the time when the increments for each of these classes of areas would be consumed. In addition, a determination will be made as to how much growth will be permitted and the time that growth would be constrained if the amount of increment available for a Class III area were permitted to be expanded to a level equal to the secondary NAAQS.

Modification to PSD and Nonattainment - Varying Offset Ratio

One of the major aspects of the offset policy is the offset ratio. The specific offset ratio that is required will have an impact on the attainment date for the NAAQS and the overall economics of the region. The offset ratio in the Ohio River Valley area varies from 1.1:1 to 1.2:1. However, these ratios are only a guide and no specific ratio as such is required except just above 1:1.

The offset ratio can affect whether a new source will actually construct or an existing source will choose to expand its operation. It influences the cost of siting, the cost of control and will have a major role in determining reasonable further progress and will determine how quickly an area can attain the NAAQS. Both more stringent and less stringent offset ratios will be examined. The Ohio River Valley will be the only study area which will evaluate the impact of varying the offset ratio.

Modification to PSD and Nonattainment - Emission Allocation

Emission allocation programs are a form of air quality management that limits the amount of pollution permitted in a given area. Emission allocation programs attempt to combine the land use and growth plans for an area with its air quality planning process. New source growth or expansion of existing facilities must be consistent with the emission allocation program for the area. The implementation of an emission allocation program relies on the availability of an accurate and representative emission inventory.

There are several methods for implementing an emission allocation program. One method sets emission quotas over a large regional area consistent with the protection of the NAAQS and allocates the emission quota to subareas within the region. Another method divides the area into parcels and allocates to each parcel an emission density (e.g., tons per square mile) which determines the allowable emissions which could be emitted for a source depending on its area of impact. A third method, referred to as floating zones, permits a new source to locate in an area if its location would be consistent with the land-use zoning for the area and the emissions, for example, within a one-square-mile area around the source would not exceed the prescribed emission levels.

In developing an emission allocation program, the local agency must perform some initial modeling to determine what emission levels can be permitted for each area such that the

NAAQS will not be violated. Once the emission levels are established for an area, no further air quality dispersion modeling per se would be needed to assure that the NAAQS's would not be violated.

Jefferson County, Kentucky, experimented with a floating zone approach for several years and later abandoned the program. The county also proposed a comprehensive emission density program but has never implemented it. The county, however, is calculating emission density limits for certain parcels of land on a case-by-case basis at the time that an area is being rezoned.

Examination of the Effect of Alternative Ambient Pollutant Levels

The attainment of the NAAQS through the air quality management approach for air pollution control is one of the basic principles of the Clean Air Act. The difference between the NAAQS and the current air quality levels for an area determine the level of control needed in order to attain the NAAQS within a prescribed time period (i.e., no later than 1982 or 1987 depending on the pollutant and whether a five year extension has been granted pursuant to the requirements established by the Clean Air Act). Because the NAAQS plays such a major role in the implementation of the Act, the exact level of the NAAQS has been a point of concern and controversy over the past couple of years. Consequently, alternative levels of the ozone standard will be evaluated with respect to their impact on the current

control strategies for the area, growth and regional economics. An analysis also will be undertaken to determine the impact of changing the current attainment date for ozone, particulate matter and sulfur dioxide.

DATA COLLECTION METHODOLOGY

The analysis of the policy alternatives and the corresponding pollutants will be limited to those in Table 1. The initial step in evaluating the policy alternatives is to define the data that will be needed in order to assess the impact of the various alternatives and to identify the possible sources of such data. One of the major sources of information will be the emission inventory for the study area and the various levels of control defined as part of the Phase II activities to evaluate alternate measures for emission reductions. The SIP, BACT, RACT, and LAER limits for all the major sources along with the associated cost of control will be needed to complete some of the required analysis in Phase III.

In addition to data on emissions and emission reductions, the air quality impact of imposing certain policy alternatives must be assessed. The types of data include the results from dispersion modeling analyses which have been conducted for the area, the various stack and source parameters needed for dispersion modeling, the modeling and information from the PSD and nonattainment permits which have been issued for the major sources in the area, and the growth projections through 1990.

The current TSP, SO_2, and O_3 air quality levels for the area along with the projected air quality levels for 1982, 1987, and 1990 are also needed.

Data on the costs associated with the various levels of control and the economic impact of various policy options must also be obtained.

The above data will be gathered as part of the data collection efforts in Phase I and Phase II. The methodologies will be the same as outlined for the analysis of feasibility of emission reduction measures, estimating air quality impact, control cost, analysis of alternate measures for emission reduction, and analysis of economic impact.

MAJOR ITEMS TO BE INCLUDED IN POLICY ALTERNATIVE ANALYSES

While some of the policy alternatives to be evaluated have common items which will be included in the assessment, there are some items which will be unique for each alternative. Therefore, a short summary by policy alternative is provided in order to identify those items which will be assessed.

Uniform Emission Standards for New and Existing Source Categories

1. Emissions and air quality impact
2. Economic impact
3. Administrative impacts
4. Impact on growth
5. Impact on secondary pollutant precursors
6. Effect on attainment/maintenance of NAAQS.

Transferable Emission Reduction Assessments

1. Control costs for the major sources to achieve the NAAQS.
2. Ease or difficulty in attaining the NAAQS vs. current regulatory approach.

Evaluation of Prevention of Significant Deterioration

1. Amount and type of growth permitted for each Class area.
2. Time at which increment may be used up in each Class area.
3. Amount and type of growth that would be permitted if deterioration were permitted up to the secondary standard.

Modification to PSD and Nonattainment - Varying Offset Ratio

1. Impact of selected offset ratios on reasonable further progress and the prescribed attainment date.
2. Costs associated with using selected offset ratios.
3. Changes in availability of offsets under different ratios.
4. Impact on new source growth.
5. Criteria to be used in setting offset ratios.

Modification to PSD and Nonattainment - Emission Allocation

1. Assessment of institutional problems associated with this approach.
2. Assessment of the weaknesses of Jefferson County Plan.

3. Amount and type of resources to implement an emission allocation plan.
4. Impact on growth.
5. Extent that an emission allocation plan can assure that increments will be protected.

Examination of the Effect of Alternative Ambient Pollutant Levels

1. Changes in present strategy to attain ozone standard.
2. Impact on economics and growth.
3. Ability of the area to attain the standard by the prescribed date.

ANALYTICAL METHODOLOGY

A great deal of the analytical methodology or approach regarding the evaluation of the selected policy alternatives is set forth in the metholodologies for analysis of the feasibility of emission reduction measures, estimating air quality impact, control cost, analysis of alternate measures for emission reduction, and economic impact. As noted in the scope of work for the evaluation of the policy alternatives, the impact of imposing specific alternatives should be consistent with Task 4a of Phase I and Task 1b of Phase II. The changes in base case emissions as the result of imposing the various policy alternatives will be consistent with the methods used to estimate the required changes in emissions under Task 4b of Phase I and Task 1c of Phase II. The changes in the air quality impact will be consistent with Task 5b of Phase I and Task 1c of Phase II.

Finally, the economic impact on the region will be performed using the methodology developed pursuant to Task 6 of Phase I.

While the Phase III analysis will depend in large part on the data and approaches taken in Phases I and II, some unique aspects or special approaches will be necessary as some policy alternatives are designed to assess other items than just their impact on emissions and air quality. (See Table 4 summary of key elements in analytical methodology.)

Uniform Emission Standards For New and Existing Source Categories

The first step in completing this assessment is to determine what level of control represents BACT. This will be accomplished as part of the Phase II activities to evaluate alternate measures for emission reduction.

The second step is to apply this level of control to the major sources in the study area to determine the levels of emission reductions that will be obtained beyond those currently called for in the SIP.

The third step is to translate these emission reductions or changes into corresponding air quality impacts by using the methodology submitted on June 14 for estimating air quality impacts.

The final step is to relate these changes in emissions to the potential for additional growth in terms additional emissions that could be permitted for the area and still provide for attainment and maintenance of the NAAQS for the Class II

TABLE 4. SUMMARY OF KEY ELEMENTS IN ANALYTICAL METHODOLOGY

	Uniform technology standard	TERA	PSD	Offset ratio	Emission allocation	Alternate level NAAQS
Determine level of control (BACT or RACT vs. SIP)	x	x				
Calculate emission changes	x	x	x	x	x	x
Calculate air quality changes	x		x	x	x	x
Calculate cost impacts	x	x		x		x
Calculate economic impact	x			x		x
Project growth for 1982, 1987, and 1990			x	x		
Project impact on growth			x	x		x

increment as applicable. Additionally, these changes in emissions will also be related to any changes in the regional economics as set forth in the control cost and economic impact methodology. Much of this assessment will have already been done as part of the Phase II activities.

TERA

The first step in conducting this assessment is to determine the incremental cost of control ($/ton) beyond RACT for the industries in the study area. These costs will be generated during the assessment of alternative measures for emission reductions.

The second step is to determine the various levels of control beyond RACT that are available for each major source in the study area.

The third step is to assess which sources are currently not meeting RACT and determine the amount of additional emission reductions that would be needed in order to achieve RACT. This would have been accomplished in large part under Phase II.

The fourth step is determining the additional emission reductions that would be needed beyond RACT to attain the NAAQS by the prescribed attainment date with a predetermined margin for growth. Also these reductions shall be such that they will provide for reasonable further progress toward attainment.

The fifth step is to allocate to each source its share of the needed reductions based on its post RACT emissions.

The sixth step is to evaluate the incremental costs for all the major sources and identify those sources that could provide the necessary emission reductions for other sources to purchase (e.g., those which would represent the best sources in terms of incremental cost of controls).

Finally, data will be gathered on the type of information that would be needed to implement a TERA concept (e.g., incremental cost of control, current RACT emissions, etc.). Information will also be gathered as a result of interviews with state and local agency personnel as well as industry representatives to evaluate how such a program would be administered and enforced.

PSD

The first step in the assessment of this alternative is to develop the necessary growth data and provide growth projections for 1982, 1987, and 1990.

The second step is to determine if this growth in terms of emissions would be limited if the air quality in the study were constrained by the Class II increment, the Class III increment, or the secondary NAAQS. This will be accomplished by simulating how and where this projected growth in emissions will occur and revise the air quality projections accordingly. Projected air quality will be compared to the Class II and III increments and the secondary NAAQS for TSP and SO_2.

The third step is to determine the total growth allowed by the Class II and the Class III increments and the secondary NAAQS if the above growth does not otherwise consume the available air quality under the Class II or III increment or the secondary NAAQS. The same basic approach used above only in reverse order would be used to calculate the additional growth in emissions which would be permitted.

The final step is to assess the potential impact of these additional emissions in terms of total atmospheric loading and overall air quality impact based on the projected growth and the relatively unrestrained growth that would otherwise be permitted if deterioration up to the secondary NAAQS would be permitted.

Modification of PSD and Nonattainment - Varying Offset Ratio

The first step is to determine the supply of offsets which are available based on the current SIP limits and to determine the cost of obtaining these offsets (i.e., cost of meeting a LAER or better limit).

The second step is to determine what offset ratios will be evaluated in the study. Presently four ratios are under consideration, 1:1, 1.1:1, 1.2:1, and 2:1.

The third step is to determine the amount of offsets that will be available for each offset ratio.

The fourth step is to determine the relative supply and demand of offsets and the costs associated with obtaining offsets for each offset ratio.

The fifth step is to determine, for each offset ratio, the impacts on air quality, emissions, economics, growth, and the time period for attaining the standard. This will be accomplished by relating the change in emissions to corresponding changes in air quality using the methodology for estimating air quality impacts.

The sixth step involves a qualitative assessment of overall impact with respect to the ability to obtain offsets and the ability of the offset ratios to force, or strongly encourage, the application of innovative control technology.

Finally, the above impacts will be compared for each offset ratio evaluated.

Modification of PSD and Nonattainment - Emission Allocation

The first step is to interview the Jefferson County officials responsible for developing and carrying out the emission allocation program. A complete bibliography (see Appendix A) on emission density zoning and other emission allocation procedures has been obtained and will be used along with the information obtained as a result of the interviews to provide additional insight into the legal issues and implementation problems associated with implementing an emission allocation program.

In addition to the above qualitative assessment, the impact on air quality of implementing an emission allocation program will be analyzed. A small portion of the study area will be evaluated (e.g., Jefferson County) to assess what the impacts would have been if the local agency had imposed the allocation system they had originally planned.

Examination of the Effect of Alternative Ambient Pollutant Levels

The first step is to take the alternative levels of the ozone standard provided by the NCAQ and compare these to the current standards in the Ohio River Valley area. Based on these comparisons, the air quality levels will be translated into corresponding emission control or emission reductions necessary to attain the alternative levels of the ozone standard.

The second step is to compare the emission reductions associated with the revised levels of the ozone standard with those needed to attain the current ozone standard and determine if any relaxation of the current controls would be permitted in order to meet the alternative level. The cost savings as a result of these revised levels will be calculated based on the methodology provided for estimating the control cost.

The third step is to evaluate the impact on additional growth (in terms of emissions) which may be permitted as a result of the alternate levels of the ozone standard.

The fourth step is to evaluate the impact of extending the attainment date for ozone, TSP and SO_2 by 2 years or 5 years and dropping the corresponding requirements for RACT, reasonable transportation control measures, and inspection and maintenance as a prerequisite for obtaining an extension of the attainment date (for the purpose of this study 1984 and 1987). This assessment will include an evaluation of the additional emissions which might be permitted as a result of an extended

reasonable further progress curve and the reduction in the level of control that may be permitted because the date for attainment has been extended. Any corresponding control cost savings as a result of these extensions will be noted and any effects on overall regional economics will be calculated accordingly.

Institutional Factors or Constraints Affecting the Implementation of the Policy Alternatives

In addition to the above technical issues associated with the implementation of the policy alternatives, a series of institutional issues or factors must be addressed regarding the implementation of each policy alternative.

The institutional factors shall include:

1. Legal and regulatory authority to implement a given policy alternative - if not currently available, what is the likelihood of obtaining this authority.

2. Receptivity by industry, government, and environmental groups to each alternative.

3. Resource demands on both the part of the agencies and industries to implement these alternatives.

4. Technical guidance or tools which need to be developed in order to implement and if necessary enforce each policy alternative.

5. The relationships between the Federal, state, and local officials.

6. The relationships between control agencies and industry, especially since several of the alternatives will take a great deal of cooperation on the part of industry in order to be implemented.

7. Long term implications on the overall institutional arrangements, resources, and capability to carryout each alternative.

8. Level of government best suited to implement each alternative. That is, is it a policy which must be implemented at the national level to provide overall

consistency or is it best suited to the local level where the knowledge of the source and the individual process are the key to success.

9. Impact on other Federal laws or programs.

10. Simplicity or ease of understanding on the part of the public and industry.

11. Involvement of public participation in policy alternatives - any alternative which precludes or limits public involvement will severely limit the ability of the alternative to effectively attain the air quality goals of the area, as clean air is a valuable public resource which is limited and should be used to the maximum benefit of the general public.

Information on the above institutional factors which must be considered in implementing a particular policy alternative will be obtained by conducting interviews with state and lcoal agency personnel, selected industrial representatives and representatives of public interest groups which have expressed an interest in the development of the policy alternatives in the study area. Some of these interviews will be conducted individually but some thought is being given to possibly convening a 1 day meeting of interested parties to discuss the policy alternatives as an exchange between participants will provide a different perspective than will be gained by talking with the individuals on a one to one basis.

In addition to the above interviews, other references regarding the implementation of several of the policy alternatives will be consulted.

REFERENCES

Since many of the policy alternatives are some what innovative and have not been completely evaluated with respect to their impact on air quality, a bibliography has been prepared to serve as a ready reference for evaluating the policy alternatives in terms of their technical and institutional feasibility. Appendix B provides a list of those references which have been identified to date and will be used to assist in the evaluation of the policy alternatives. This list of references will be ammended from time to time and Appendix B will be resubmitted and updated accordingly.

APPENDIX A

BIBLIOGRAPHY ON EMISSION DENSITY ZONING AND OTHER EMISSION ALLOCATION PROCEDURES

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APPENDIX B

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